

REMARKS

This Amendment and Response is filed in reply to the Office action dated August 4, 2006. Claims 1, 4, 11, 15-16, 18-29, 32, 34, 39, 43 and 45 are amended, and claims 3, 17, and 31 are canceled. Accordingly, after entry of this Amendment and Response, claims 1-2, 4-16, 18-30 and 32-46 remain pending.

I. Claim Objections

Claim 11 is objected to because of the following informality: "wtih" should be changed to "with." Claim 11 has been amended to correct the misspelling.

Claims 1, 15, 29 and 43 are objected to for lack of proper antecedent basis for the limitation "the first image" in each claim. Claims 1, 15, 29 and 43 have been amended to each recite the limitation "the second image" for which there is proper antecedent basis.

All claim objections are addressed and the claims are in proper form.

II. Claim Rejections Under 35 U.S.C. § 101

Claims 1-46 are rejected under 35 U.S.C. § 101 because the claimed invention is directed to non-statutory subject matter. Specifically claims 1, 15, 29 and 43 are rejected because each claim only appears to produce a tangible result under a condition when data corresponding to the second data is stored in the second image. Under all other conditions no result is produced. In response, claims 1, 15, 29 and 43 are amended to recite the limitation "modifying the data structure to indicate that the second data is stored in the second image and storing the second data in the second image." The amended claims produce a tangible result under all conditions.

Claim 15 is also rejected under 35 U.S.C. § 101 because it is not limited to tangible embodiments. Specifically, the specification defines "a machine-readable medium" as including both storage media and carrier waves. In response, claim 15 is amended to specify an article of manufacture, a tangible embodiment. Claims 16-28 and 45 are also amended to recite an article of manufacture. As amended herein, claims 15-28 and 45 are directed toward statutory subject matter in compliance with 35 U.S.C. § 101. Thus, claims 15-28 and 45, as amended herein, are now in form for allowance and such indication is respectfully requested.

III. Claim Rejections Under 35 U.S.C. § 102

Claims 1-2, 4-7, 9-11, 13-16, 18-21, 23-25, 27-30, 32-35, 37-39 and 41-46 are rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 7,031,986 to Ito

et al. (hereinafter "Ito"). An anticipation rejection requires that each and every limitation of a claim be disclosed in a single prior art reference.

Initially, the rejection of independent claims 1, 15, 29 and 43 is addressed.

Independent claims 1, 15, 29 and 43 each require "creating a data structure, in response to the command, for at least a second image which corresponds to a second storage volume, the second storage volume storing changes to the first storage volume occurring after receipt of the command." Ito does not teach such a limitation. Ito teaches the use of a disk mirroring storage system that is split when the database management system issues a command to inhibit the storage system from accepting write accesses prior to terminating the mirrored mode (see *Ito*, column 4, lines 29-41). That is, Ito maintains two complete sets of data rather than having a second storage volume just storing changes to the first storage volume as required by the independent claims.

Insofar as Ito does not teach all the limitations of independent claims 1, 15, 29 and 43, it cannot anticipate them. Accordingly, for at least the reason set forth above, claims 1, 15, 29 and 43 are patentable over Ito, believed in form for allowance, and such indication is respectfully requested.

The remaining rejected claims 2, 4-7, 9-11, 13-14, 16, 18-21, 23-25, 27-28, 30, 32-35, 37-39, 41-42, and 44-46 all depend, either directly or indirectly, from one of independent claims 1, 15, 29 and 43. Accordingly, these dependent claims are themselves patentable over Ito for at least the reason set forth above and such indication is respectfully requested. This statement is made without reference to or waiving the independent bases of patentability within each dependent claim.

IV. Claim Rejections Under 35 U.S.C. § 103

Claims 3, 8, 12, 17, 22, 26, 31, 36 and 40 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Ito in view of U.S. Patent No. 7,013,317 to Innan et al. (hereinafter "Innan"). This rejection is respectfully traversed. A proper *prima facie* obviousness rejection requires 1) a suggestion or motivation to modify the prior art reference or combine the reference teachings; 2) a reasonable expectation of success; and 3) that the combined references teach or suggest all of the claim limitations. See MPEP § 2143.

Claims 3, 8, 12, 17, 22, 26, 31, 36 and 40 all depend from independent claims 1, 15, 29 and 43. As previously discussed above, Ito does not teach all the limitations of the independent claims from which claims 3, 8, 12, 17, 22, 26, 31, 36 and 40 depend. Further, Innan does not teach or suggest the limitation "creating a data structure, in response to the command, for at least a second image which corresponds to a second storage volume, the second storage volume storing changes to the first storage volume occurring after receipt of the command."

Although Innan teaches the use of update-management tables corresponding to first and second storage devices and indicating any update to each of the data blocks of the first and second storage devices (see *Innan*, column 2, lines 10-24, Figs. 1, 2), these tables are used to track updates to the storage devices so that just changed blocks are copied to a backup device rather than having a second storage volume that just stores changes to the first storage volume as required by the independent claims. As Figs. 2(a) and 2(b) of Innan show, the storage system initially is in a mirrored state with the update-management bitmaps being identical. These bitmaps thus appear to show updates to the storage system since the last backup. When a backup is done, the mirror is split (see *Innan*, Fig. 2(b)). When the split is done, the update-management bitmap for logical unit ("LU") 0 is reset (see *Innan*, Fig. 2(c)). Any changes to the storage system are only recorded to LU0 and the corresponding bitmap locations are set to identify the changes (see *Innan*, Fig. 2(d)). Once the backup of LU1 is complete, any changes occurring during the backup are copied to LU1 and the LU1 update-management bitmap is updated so that it is identical to the LU0 update-management bitmap (see *Innan*, Fig. 2(e)). That is, Innan does not create a second storage volume used to record changes to the first storage volume since receipt of the command as required by the independent claims. Rather, Innan freezes the second storage volume so that a backup can be done using the second storage volume. Further, Innan at most uses data structures to keep track of changes since the last backup was performed rather than to track changes to the storage system since receipt of the backup command.

Thus, it is respectfully submitted that independent claims 1, 15, 29 and 43 are patentable over Ito in view of Innan and such indication is respectfully requested. The remaining rejected claims 3, 8, 12, 17, 22, 26, 31, 36 and 40 all depend, either directly or indirectly, from one of the independent claims 1, 15, 29 and 43. Accordingly, dependent claims 3, 8, 12, 17, 22, 26, 31, 36 and 40 are themselves patentable over Ito in view of Innan for the same reasons and such indication is respectfully requested.

V. Conclusion

The Applicant thanks the Examiner for his thorough review of the application. The Applicant respectfully submits the present application, as amended, is in condition for allowance and respectfully requests the issuance of a Notice of Allowability as soon as practicable.

This Amendment is submitted contemporaneously with a petition for a two-month extension of time in accordance with 37 CFR § 1.136(a). Accordingly, please charge Deposit Account No. 04-1415 in the amount of \$450.00, for a two-month extension of time fee. The Applicant believes no further fees or petitions are required. However, if any such

petitions or fees are necessary, please consider this a request therefor and authorization to charge Deposit Account No. 04-1415 accordingly.

If the Examiner should require any additional information or amendment, please contact the undersigned attorney.

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Respectfully submitted,



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